Bioethics: Issues in the History of Biology, Medicine and Society

HS 2151 – 10 credits
HS 2651 – 20 credits

Semester 1, 2003-2004

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Lecture and Seminar Schedule: Overview

Oct 3 Week 1 CT&MW	**Introduction: Biomedicine and the Origins of Bioethics** No Seminar
Oct 10 Week 2 MW	**Animals are Only Human: Vivisection and the Antivivisectionists** Seminar Reading: **Cobbe**, "The Medical Profession and its Morality"
Oct 17 Week 3 MW	**Bodies and Rights: Immunisation from BCG to MMR** Seminar Reading: **Durbach**, "They might as well brand us", and **Bryder**, "We shall not find salvation in inoculation"
Oct 24 Week 4 MW	**From Darwin to Hitler? Genetics and Eugenics** Seminar Reading: **Weale**, *Science and the Swastika*, and **Weindling**, "The 'Sonderweg' of German Eugenics" Suggestions for essay topics will be handed out in the seminar. Please start planning your essay (and the project for students who are taking this course for 20 credits). Arrange a meeting with the tutor to discuss your essay and project ideas.
Oct 31 Week 5 CT	**Nazi Doctors, the Nuremberg Code, and the History of Informed Consent** Seminar Reading: **Weindling**, "Human Guinea Pigs and the Ethics of Experimentation", and **Grodin**, "Historical Origins of the Nuremberg Code" Have you decided on your essay and project topics yet?
Nov 7 Week 6 CT	**The Business of Biomedicine: Drug Research and the Quest for Magic Bullets** Seminar Reading: **Timmermans & Leiter**, "The Redemption of Thalidomide"
Nov 14 Week 7	***Reading Week*** No lecture, no seminar. Time to work on your essay.
Nov 21 Week 8 MW	**Manmade Plagues: Emerging Diseases** Seminar Reading: **Lederberg**, "Infectious History", and **Farmer**, "Social Inequalities and Emerging Infectious Diseases" You should by now have talked to the tutor about your essays and projects and started to research and write.

Nov 28 **Week 9** **VJ**	**Science and the Environment** Seminar Reading: **White Jr.**, "The Historical Roots of Our Ecological Crisis", and **Krieger**, "What's Wrong with Plastic Trees"
Dec 5 **Week 10** **CT**	**Dangerous Germs: Biology and Warfare** Seminar Reading: **Jeffrey**, "The Dark Side of Biotechnology", and **Henderson**, "The Looming Threat of Bioterrorism"
Dec 12 **Week 11** **ET**	**Reproductive Technologies: Choice, Commodification and Culture** Seminar Reading: **Langdridge & Blyth**, "Regulation of assisted conception services in Europe", **Lock**, "Perfecting society", **leaflets**: *Patient's Guide to Infertility and IVF* and *Sperm and Egg Donors and the Law*
Dec 19 **Week 12** **CT**	**Selling Genes: the Business of Biotechnology and the Human Genome Project** No Seminar. **Essays and projects are due**. Please hand in two copies of each piece of work after the lecture or post them in the CHSTM essay box outside the departmental office, room 3.45, by 5pm.

Introduction

Many of the concerns and ethical questions related to modern biology and biomedical science have a long history. This course, which is team-taught by CHSTM staff, will give students a historically-grounded introduction to these ethical issues. It is designed with students in biological sciences and medicine in mind, but will also provide those studying arts and social sciences with an accessible introduction to a set of issues and concerns that are central for a better understanding of modern society.

Aims and Objectives

By the end of this course, students will:

1) have gained insights in the histories of some of the key debates in modern medicine and biology, for example over the use of animals, human subjects and human body parts in biomedical research; eugenics; vaccinations and antivaccinationism; biological warfare; corporate involvement in biomedical research; biological warfare; reproductive technologies; genetic modification of organisms; and science and the environment.
2) be able to take part in informed discussions about these issues.
3) know where to find material for further research.

Course Mechanics

This course will be taught in two slots (one lecture and one seminar) in Semester 1. Ideally, we will schedule the seminars for the same day as the lecture. i.e. Monday. Attendance at both seminars and lectures is compulsory and will be monitored.

Seminar Readings

The seminars will consist of discussions of readings relevant to the theme of the respective lecture. Photocopies of the readings will in most cases be placed in the Short Loan Collection in John Ryland's University Library. For readings whose locations are not specified in this course handbook, please consult the library catalogue. You will have to select 'photocopies' in the search form.

Some journal articles are available in electronic form through the John Rylands University Library website (http://rylibweb.man.ac.uk/). You can find them under 'Electronic Resources' or if you do a title search for the respective periodicals in the general catalogue. We have marked the readings that are available electronically with a little logo: 💻

You should study these readings carefully before the seminar, making notes on no more than one page of A4 paper (typed) per reading, summarising the main points of the reading that are relevant to the course. You will hand in your notes to the tutor after the seminar. Along with your participation in the discussion, these notes will contribute to your mark for seminar work. They will also come very handy when you prepare your essays and projects!

Background Readings

In case you want to know more about an issue, you may choose to consult the recommended background readings, which are also good starting points for essay research.

You should also read one of these background readings if you can't get hold of seminar readings.

Assessment

10 Credits

There is no exam for this course. You will be marked for a 1,500-word essay (50%) and for your seminar work. The seminar mark will be mostly based (40%) on the notes on the main points of the seminar readings discussed in that respective session, which you hand in to the tutor after each session (max. one typed page of A4 per reading – to be able to summarise texts very briefly is a valuable skill, and the notes will be helpful when you write your essays and projects). The remaining 10% of the course mark will be based on your performance during seminar discussions.

You should start thinking about a possible essay topic as soon as possible. The lecturers will be handing out a number of suggested essay subjects and a reading list by week 4, but you are encouraged to devise your own topic in consultation with the lecturer. Please arrange a meeting to talk about this no later than week 7. The best way of contacting the lecturers is by email: carsten.timmermann@man.ac.uk or michael.worboys@man.ac.uk

In writing your essay you should use at least six sources (i.e. books, articles, chapters, and websites), out of which two should be books. Remember, using a book does not necessarily mean reading it from cover to cover.

The essay will be due in week 12, on December 19. Please make sure that you read the essay guidelines that are attached to this course outline. Please submit two copies of the essay and don't forget to attach

- cover sheets which will be available from the lecturer or outside the CHSTM departmental office in the Maths Tower.
- and to sign and hand in the plagiarism declaration (included with this course handbook or available from the lecturer or outside the CHSTM departmental office in the Maths Tower).

Essays (two copies) are to be handed in after the lecture or posted in the CHSTM essay box outside the departmental office, room 3.45 in the Maths Building, by 5pm.

20 Credits

Students taking the 20 credit option, in the same way as 10-credit students, will be asked to submit a 1,500-word essay and marked for notes on the reading and seminar performance. Essay and seminar work, however, will only make up 50% of the total course mark. For the remaining 50% you will be asked to produce a 3,000-word project, by Friday, December 19, 5pm (to be handed in after the lecture or posted in the CHSTM essay box outside the departmental office, room 3.45).

A project can be a longer essay, but it can also be, for example, a website, a multi-media presentation, a drama or a radio play dealing with issues discussed during the course. You should start thinking about your project as soon as possible and arrange a meeting with the lecturer to discuss topics and ideas by week 6.

When you hand in your project on December 19, please attach to it the same documents as to the essay.

Plagiarism

Plagiarism is a very serious offence, comparable to cheating in exams. It consists of passing off others' work as though it were your own (eg, lifting passages – either word-for-word or close paraphrasing - from books, articles, the internet, etc.). Even 'recycling' parts of your own work, which has been submitted for assessment at this University or elsewhere, constitutes plagiarism. The penalties for plagiarism range from being required to resubmit the piece of work in question (with a maximum possible mark of 40%) for minor instances to expulsion from the University in serious ones. It is your responsibility, therefore, to familiarise yourself with the University's policy on plagiarism before you prepare and submit any coursework. The information you need can be accessed via the Student Intranet (via the University's home page). At the end of this course outline, accordingly, you will find a 'plagiarism declaration' form which you must complete, sign, and attach to your essay(s) for this course.

Disability Support

The University of Manchester is committed to providing all students access to learning in the way most beneficial to them. It is important to tell us about any additional support that you need. If you have a disability, a learning difficulty or any condition that you feel may affect your work then you might want to tell us about it. Please feel free to approach the lecturer to discuss any additional needs that you have. You may wish to email me, ring me, or we can meet in my office (email address, phone number and room number on the cover of this course handbook). Any discussion we have will of course be strictly confidential.

Lecture and Seminar Schedule: Details

Week 1
Introduction: Reductionism in Biomedicine and the Origins of Bioethics

Lecture: Oct 3 (Carsten Timmermann)

We are sometimes tempted to think that medicine, biology and biomedical science have always essentially followed the same principles. After all, medicine is about healing the sick and biology about understanding life, and the connections between the two seem obvious. But are they really? In this introductory lecture we will uncover the fundamental changes to medicine that the nineteenth and twentieth centuries witnessed in medicine and the biomedical sciences. We will also listen to some of the critical voices.

There is no seminar in week 1.

Background Reading

- Roy Porter, "Scientific Medicine in the Nineteenth Century," Chapter XI in his *The Greatest Benefit to Mankind: A Medical History of Humanity*, New York & London: Norton, 1997 [also available in other editions].
- Roy Porter, *Blood and Guts: A Short History of Medicine*, London: Allen Lane/Penguin, 2002.
- Christopher Lawrence, *Medicine in the Making of Modern Britain 1700-1920***,** London & New York: Routledge, 1994.
- Christopher Lawrence, "Incommunicable Knowledge: Science, Technology and the Clinical Art in Britain 1850-1914," *Journal of Contemporary History***,** 20, 1985, 503-20.
- N. D. Jewson, "The Disappearance of the Sick-Man from Medical Cosmology, 1770-1870," *Sociology*, 10, 1976, 225-244.
- Michel Foucault, *The Birth of the Clinic: an archaeology of medical perception*, London: Tavistock Publications, 1973.
- John Pickstone, "Objects and Objectives: notes on the material culture of medicine," in: G. Lawrence, ed., *Technologies of Modern Medicine*, London: Science Museum, 1994.
- Michael Worboys, "British Medicine and its Past at Queen Victoria's Jubilees and the 1900 Centennial," *Medical History,* 45, 2001, 461-482.
- Andreas-Holger Maehle & Johanna Geyer-Kordesch, eds., *Historical and Philosophical Perspectives on Biomedical Ethics*, Aldershot: Ashgate, 2002.

Week 2
Animals are only Human: Vivisection and the Antivivisectionists

Lecture: Oct 10 (Michael Worboys)

In Britain after 1875 and unlike in any other modern industrial country at the time, animal experimentation was regulated by a government agency. The agency worked with

legislation that required all animal laboratories to be licensed and scientists had to seek permission for individual experiments. At the time and since, British scientists have complained that these constraints have hindered the development of the biomedical sciences in this country. In this lecture we explore the origins of these controls and their consequences. For this week's seminar you are required to read an attack on the medical profession published in 1881 by Frances Cobbe, the leader of the late Victorian antivivisection movement, and then prepare two responses: (1) a defence that a scientist in 1881 might have made to Cobbe's objections to vivisection; and (2) a defence that a scientist in 2003 could make.

Seminar Reading

- F. Cobbe, "The Medical Profession and its Morality," *Modern Review*, 2, 1881, 296-328.

Background Reading

- J. Turner, Reckoning with the Beast: Animals, Pain and Humanity in the Victorian Mind Baltimore & London: Johns Hopkins University Press, 1980.
- E.M. Tansey, ""The Queen has been dreadfully shocked': Aspects of teaching experimental physiology using animals in Britain, 1876-1986," American journal of physiology. Vol. 274, no. 6 Pt. 2, Jun. 1998, S18-S33. 💻
- Richard D. French, Antivivisection and Medical Science in Victorian Society, Princeton & London: Princeton University Press, 1975.
- Nicolaas Rupke, ed., Vivisection in Historical Perspective, London: Croom Helm, 1987, Chapters 4, 6, 8 and 11.
- L. G. Stevenson, "Science Down the Drain: On the hostility of certain sanitarians to animal experimentation, bacteriology and immunology," Bulletin of the History of Medicine, 29, 1955, 1-26.
- H. Kean, "The 'Smooth Cool Men of Science': The feminist and socialist response to vivisection," History Workshop Journal, 40, 1995, 16-38.

Week 3
Bodies and Rights: Immunisation from BCG to MMR

Lecture: Oct 17 (Michael Worboys)

In 1853 the British government introduced compulsory vaccination against smallpox in an effort to control a deadly epidemic disease. The measure was resisted passively and actively, which led the government to tighten the penalties for avoidance. However, this only served to strengthen resistance and produced a large antivaccination movement. In this lecture we look at the nature of the Victorian antivaccination movement and its consequences, following antivaccination sentiment through to the 20th century and resistance to BCG immunisation against TB, and reflect on the recent controversy with MMR vaccines.

Seminar Reading

- Nadja Durbach, "'They might as well brand us': Working class resistance to compulsory vaccination in Victorian Britain," *Social History of Medicine*, 13, 2000, 45-62. 💻
- Linda Bryder, "'We shall not find salvation in inoculation': BCG vaccination in Scandinavia, Britain and the USA, 1921-1960," *Social Science and Medicine* 49, 1999, no. 9, 1157-1167. 💻

Background Reading

- A. Beck, "Issues in the anti-vaccination movement in England," *Medical History*, 4, 1960, 310-321.
- L. G. Stevenson, "Science Down the Drain: On the hostility of certain sanitarians to animal experimentation, bacteriology and immunology," *Bulletin of the History of Medicine*, 29, 1955, 1-26.
- R. MacLeod, "Law, medicine and public opinion: The resistance to compulsory health legislation, 1870-1907," *Public Law*, Summer and Autumn issues, 1967, 107-28 and 189-211.
- F. B. Smith, "Tuberculosis and bureaucracy: Bacille Calmette et Guérin (BCG) its troubled path to acceptance in Britain and Australia," *Medical Journal of Australia*, 159 (6), 408-411

Week 4
From Darwin to Hitler? Genetics and Eugenics

Lecture: Oct 24 (Michael Worboys)

The most infamous use of racial ideas in the twentieth century was in Nazi Germany in the 1930s and 1940s. In this lecture and seminar we look at the influence of eugenics on Nazi racial policies. The lecture hour will be devoted to the screening of a recent Channel 4 documentary entitled 'Hitler's Biological Soldiers', from the Science and the Swastika series. The script is more or less repeated in the book from the series: A Weale, *Science and the Swastika*, 2000. For the seminar you are asked to compare the narrative and analysis of the documentary with that given in the writings of professional historians. The key question to reflect on is - to what extent were Nazi racial ideas and policies influenced by German eugenists and German eugenic institutions?

Seminar Reading

- Adrian Weale, *Science and the Swastika*, London: Channel 4 Books, 2001, 22-62.
- Paul Weindling, "The 'Sonderweg' of German Eugenics: Nationalism and scientific internationalism," *British Journal for the History of Science*, 22, 1989, 321-34.

Background Reading

- Sheila Weiss, "The race hygiene movement in Germany," *Osiris*, 3, 1987,193-236. 💻

- Mark B. Adam, *The Wellborn Science: Eugenics in Germany, France, Brazil and Russia*, New York & Oxford: Oxford University Press, 1990.
- Michael Burleigh and Wolfgang Wippermann, *The Racial State: Germany 1933-45*, Cambridge: Cambridge University Press, 1990.
- Peter Weingart, "German eugenics between science and politics," *Osiris*, 5, 1989, 260-82. 💻
- Sheila Weiss, "Wilhelm Schallmeyer and the logic of German eugenics," *Isis*, 77, 1986, 33-46.
- Paul Weindling, "Weimar eugenics," *Annals of Science*, 42, 1985, 303-18.
- Robert N. Proctor, *Racial Hygiene: Medicine under the Nazis*, Cambridge, Mass. & London: Harvard University Press, 1988.
- Michael Burleigh, *Death and Deliverance : Euthanasia in Germany c.1900-1945*, Cambridge: Cambridge University Press, 1994
- Götz Aly *et al*, eds., *Cleansing the Fatherland: Nazi Medicine and Racial Hygiene*, Baltimore & London: Johns Hopkins University Press, 1994.
- Stefan Kühl, *The Nazi Connection: Eugenics, American Racism and German National Socialism*, New York & Oxford: Oxford University Press, 1994.
- Michael Burleigh, *Ethics and Extermination: Reflections on Nazi Genocide*, Cambridge: Cambridge University Press, 1997.

Week 5
Nazi Doctors, the Nuremberg Code, and the History of Informed Consent

Lecture: Oct 31 (Carsten Timmermann)

The best known and most important set of rules regarding human rights in human experimentation is the Nuremberg Code, commonly credited as one of the main sources for the principle of informed consent. The Code was named after the German city of Nuremberg, the site of the allied court dealing with Nazi war crimes, where in 1946 a trial was opened against 23 doctors for their involvement in human experiments on concentration camp inmates and other Nazi crimes. In this lecture we will explore why so many doctors were fascinated by the Nazis, and how they could reconcile this with their professional ethics. We will compare the human experiments pursued in Nazi Germany with medical research elsewhere and ask what changes Nazi crimes triggered in biomedical research internationally. In the seminar we will discuss the history of human experiments and the origins of informed consent.

Seminar Reading

- Paul Weindling, "Human Guinea Pigs and the Ethics of Experimentation: The BMJ's Correspondent at the Nuremberg Medical Trial," *British Medical Journal*, 313, 1996, 1467-70. 💻

– Michael A. Grodin, "Historical Origins of the Nuremberg Code," in: George J. Annas and Michael A. Grodin, eds., *The Nazi Doctors and the Nuremberg Code: Human Rights in Human Experimentation*, New York & Oxford: Oxford University Press, 1992, 121-144.

Background Reading

– Götz Aly, Peter Chroust, and Christian Pross, *Cleansing the Fatherland: Nazi Medicine and Racial Hygiene*, Baltimore and London: Johns Hopkins University Press, 1994.

– George J. Annas and Michael A. Grodin, eds., *The Nazi Doctors and the Nuremberg Code: Human Rights in Human Experimentation*, New York & Oxford: Oxford University Press, 1992.

– Arthur L. Caplan, ed., *When Medicine Went Mad: Bioethics and the Holocaust*, Totowa, N.J.: Humana Press, 1992.

– Ruth R. Faden, Tom L. Beauchamp, and Nancy M. P. King, *A History and Theory of Informed Consent*, New York & Oxford: Oxford University Press, 1986.

– Michael H. Kater, *Doctors under Hitler*, Chapel Hill and London: University of North Carolina Press, 1989.

– Robert Jay Lifton, *The Nazi Doctors: A Study in the Psychology of Evil*, London: Macmillan, 1986.

– Kristie Macrakis, *Surviving the Swastica: Scientific Research in Nazi Germany*, Oxford & New York: Open University Press, 1993.

– Alexander Mitscherlich and Fred Mielke, *The Death Doctors*, London: Elek, 1962.

– Detlev J. K. Peukert, "The Genesis of the 'Final Solution' from the Spirit of Science," in: David F. Crew, ed., *Nazism and German Society 1933-1945*, London: Routledge, 1994, 274-99.

– Robert N. Proctor, *Racial Hygiene: Medicine under the Nazis*, Cambridge, Mass. & London: Harvard University Press, 1988.

– Robert N. Proctor, "The Nazi War on Tobacco: Ideology, Evidence, and Possible Cancer Consequences," *Bulletin of the History of Medicine*, 71, 1997, 435-488. 💻

– Monika Renneberg and Mark Walker, eds., *Science, Technology and National Socialism*, Cambridge: Cambridge University Press, 1994.

– Carsten Timmermann, "A Model for the New Physician: Hippocrates in Interwar Germany," in: David Cantor, ed., *Reinventing Hippocrates*, Aldershot: Ashgate, 2001, 302-24.

– Paul Weindling, *Health, Race, and German Politics between National Unification and Nazism, 1870-1945*, Cambridge: Cambridge University Press, 1989.

– Jonathan D. Moreno, *Undue Risk: Secret State Experiments on Humans*, New York: Routledge, 2001.

– Susan E. Lederer, *Subjected to Science: human experimentation in America before the Second World War*, Baltimore & London: Johns Hopkins University Press, 1995.

– Ulrich Tröhler, "Human Research: from ethos to law, from national to international regulations, in: A.-H. Maehle & J. Geyer-Kordesch, eds., *Historical and Philosophical Perspectives on Biomedical Ethics*, Aldershot: Ashgate, 2002, 95-117.

Week 6
The Business of Biomedicine: Drug Research and the Quest for Magic Bullets

Lecture: Nov 7 (Carsten Timmermann)

The twentieth century has often been seen as a golden age for biomedical research, with the age-old hunt for magic bullets against the great killer diseases finally bearing fruit. In this lecture we will look at the mechanics of the race for new drugs. We will discover its roots in the nineteenth century, in the hunt for germs and the dealings of the chemical industry, before we turn to such iconic twentieth-century discoveries as penicillin. We will ask what role the new drugs have played for the decline of mortality figures and the changing morbidity patterns in the West. In the seminar we will discuss one of the worst disasters related to the use of new drugs, the thalidomide tragedy, and its legacy for drug legislation.

Seminar Reading

– Stefan Timmermans and Valerie Leiter, "The Redemption of Thalidomide: Standardizing the Risk of Birth Defects," *Social Studies of Science*, 30, 2000, 41-71. 💻

Background Reading

– John Abraham, *Science, Politics and the Pharmaceutical Industry: Controversy and bias in drug regulation*, London: UCL Press, 1995.

– Jonathan Liebenau, *Medical Science and Medical Industry: The Formation of the American Pharmaceutical Industry*, Houndmills: Macmillan, 1987.

– John Mann, *The Elusive Magic Bullet : the search for the perfect drug*, Oxford: Oxford University Press, 1999.

– Ernst Bäumler, *In Search of the Magic Bullet : great adventures in modern drug research, London: Thames & Hudson*, 1965.

– Frances R. Balkwill, *Microbes, Bugs and Wonder Drugs : potions to penicillin, aspirin to addiction*, London: Portland Press, 1995.

– M. Weatherall, *In Search of a Cure: A History of Pharmaceutical Discovery*, Oxford: Oxford University Press, 1990.

– John C. Sheehan, *The Enchanted Ring: the untold story of penicillin*, Cambridge, Mass. & London: MIT Press, 1982

– Ronald Hare, *The Birth of Penicillin, and the Disarming of Microbes*, London: Allen & Unwin, 1970

– Lennard Bickel, *Rise up to Life: a biography of Howard Walter Florey who gave penicillin to the world*, London: Angus & Robertson, 1972.

- Thomas Maeder, *Adverse Reactions*, New York: Morrow, 1994.
- Stephen Fried, *Bitter Pills: Inside the Hazardous World of Legal Drugs*, New York etc.: Bantam, 1998.
- Phillip Knightley, *et al*, *Suffer the Children: The Story of Thalidomide*, London: Andre Deutsch, 1979.

Week 7
Reading Week

You should use this week to work on your essays and projects.

Week 8
Manmade Plagues: Emerging Diseases

Lecture: Nov 21 (Michael Worboys)

In this lecture we explore the emergence of 'new infectious diseases' over the last fifty year and ask to what extent these are 'man-made'. We will discuss several categories of such diseases, for example, those produced by antibiotic resistance (MRS TB), those produced by modern life styles (Legionnaire's disease and HIV/AIDS), those 'discovered by the 'new molecular biology', those produced by industrial methods (BSE and vCJD). Much of the writing on this topic is structured around the notion of a 'world out of balance'. In the seminar we discuss the meaning of this term and ask whether the world has ever been in balance? We will also discuss how the world might be put back in balance.

Seminar Reading

- J. Lederberg, "Infectious History," *Science*, Vol. 287, 2000, 287-90. 💻
- P. Farmer, "Social Inequalities and Emerging Infectious Diseases," *Emerging Infectious Diseases*, Vol. 2, 1996, 259-69.

Background Reading

- L. Garrett, *The Coming Plague: Newly Emerging Diseases in a World Out of Balance*, 1994.
- D.M. Weir, "The coming plague: newly emerging diseases in a world out of balance," *Proceedings of the Royal College of Physicians of Edinburgh*, Vol. 26, 1996, 645-654
- L. B. Reichman and J. Tanne, *Timebomb: the global epidemic of multi-drug-resistant tuberculosis*, 2002.
- Paul Farmer, *Infections and Inequalities: The Modern Plagues*, 1999.
- Hugh Pennington, *When Food Kills: BSE, E. coli and Disaster Science*, 2003.
- Andrew Rowell, *Don't Worry [it's Safe to Eat]: The True Story of GM Food, BSE and Foot and Mouth*, 2003.

Week 9
Science and the Environment

Lecture: Nov 28 (Vladimir Jankovic)

Pandemics, global warming, mass extinctions, disappearing forests, whenever a new environmental disaster hits the headlines, science and technology are inevitably invoked. Modernity and our reliance on technology are usually blamed for the problem, and scientists serve also as experts. How new are these concerns? We will discuss the origins of ecological thinking and some of the consequences.

Seminar Reading

- Lynn White Jr., "The Historical Roots of Our Ecological Crisis," *Science* 155, 1967, 1203-1207. 💻
- Martin Krieger, 'What's Wrong with Plastic Trees,' *Science* 179, 1973, 446-455. 💻

Background Reading

- Anna Bramwell, *Ecology in the 20th century : a history*, Yale University Press, 1989.
- William Cronon (ed), *Uncommon ground : toward reinventing nature*, W.W. Norton & Co, 1995.
- Michael E. Soule and Gary Lease, eds, *Reinventing Nature? Responses to Postmodern Deconstruction*, Island Press, 1995.
- Steven Yearley, *The Green Case: A Sociology of Environmental Issues, Arguments and Politics*, Routledge, 1991.
- Donald Worster, *Nature's economy: a history of ecological ideas*, Cambridge, 1994.
- Clarence Glacken, *Traces on the Rhodian shore: nature and culture in Western thought*, Cambridge, 1967.
- Geneivieve Massard-Gilbaud, Harold Platt and Dieter Schott, eds, *Cities and Catastrophes: Coping with Emergency in Euopean History*, Peter Lang, 2002.

Week 10
Dangerous Germs: Biology and Warfare

Lecture: Dec 5 (Carsten Timmermann)

Biological weapons have long been an issue of concern. More recently, after the terrorist attacks on the World Trade Center in New York and the following anthrax scare, as well as the arguments over Iraqi weapons of mass destruction, worries have been growing that terrorists and so-called rogue states may be in possession of such weapons. This lecture will look at the history of biological weapons programmes, including those closer to home in the UK and the US.

Seminar Reading

- Smith R. Jeffrey, "The Dark Side of Biotechnology: scientific achievements threaten international treaty banning biological warfare," *Science*, 224, 1984, 1215. 💻
- Donald A. Henderson, "The Looming Threat of Bioterrorism," *Science*, 283, 1999, 1279. 💻

Background Reading

- Robert Harris & Jeremy Paxman, *A Higher Form of Killing: The Secret Story of Gas and Germ Warfare*, Arrow, 2nd edition, 2002.
- Erhard Geissler & John Ellis van Courtland Moon, eds., *Biological and Toxin Weapons: research, development and use from the Middle Ages to 1945*, Oxford: Oxford University Press, 1999.
- Ken Alibek, *Biohazard: the chilling true story of the largest covert biological weapons program in the world, told from the inside by the man who ran it*, London: Hutchinson, 1999.
- Jeanne Guillemin, *Anthrax: the investigation of a deadly outbreak*, Berkeley & London : University of California Press, 1999.
- Edward Regis, *The Biology of Doom: the history of America's secret germ warfare project*, New York: Henry Holt, 1999.
- Stephen Endicott & Edward Hagerman, *The United States and Biological Warfare: secrets from the early cold war and Korea*, Bloomington & Indianopolis: Indiana University Press, 1998.
- Bridget Goodwin, *Keen as Mustard: Britain's horrific chemical warfare experiments in Australia*, St. Lucia: Univ. of Queensland Press, 1998.
- Wendy Barnaby, *The Plague Makers: the secret world of biological warfare*, London: Vision, 1997.
- Peter Hammond & Gradon Carter, *From Biological Warfare to Healthcare: Porton Down 1940-2000*, Houndmills: Palgrave, 2002.

Week 11
Reproductive Technologies: Choice, Commodification, and Culture

Lecture: Dec 12 (Elizabeth Toon)

Since the 1960s and 1970s, reproductive technologies to have been the focus of much media attention and ethical discourse. When considering such technologies as oocyte and sperm donation, preimplantation genetic diagnosis, and sex selection, ethicists in Europe and North America have focused primarily on questions about the limits of reproductive autonomy and the ethical implications of commodification, This lecture outlines these discussions, but also asks how historical, sociological, anthropological, and legal perspectives on the use of reproductive technologies can illuminate our thinking about current controversies.

Seminar Reading

- Darren Langdridge and Eric Blyth, "Regulation of assisted conception services in Europe: Implications of the new reproductive technologies for 'the family'," *Journal of Social Welfare and Family Law* 23, 2001, 45-64. 💻
- Margaret Lock, 'Perfecting society: reproductive technologies, genetic testing, and the planned family in Japan', in M. Lock and P.A. Kaufert, *Pragmatic women and body politics*, Cambridge University Press, 1998, 206-239.
- Please browse two Human Fertilisation and Embryo Authority leaflets: *Patient's Guide to Infertility and IVF* (http://www.hfea.gov.uk/ForPatients/PatientsGuidetoInfertility) and *Sperm and Egg Donors and the Law* (http://www.hfea.gov.uk/ForDonors/Donorsandthelaw). 💻

Background Reading

- Gay Becker, *The elusive embryo: How women and men approach the new reproductive technologies*, University of California Press, 2000.
- Jeanette Edwards et al, *Technologies of procreation: Kinship in the age of assisted conception,* 2nd edition, Routledge, 1999.
- Faye D. Ginsburg and Rayna Rapp (eds), *Conceiving the new world order: The global politics of reproduction*, University of California Press, 1995.
- Margaret Lock and Patricia A. Kaufert (eds), *Pragmatic women and body politics*, Cambridge University Press, 1998.
- Rayna Rapp, *Testing women, testing the fetus: The social impact of amniocentesis in America*, Routledge, 2000.
- Ann Rudinow Saetnan et al (eds), *Bodies of technology: Women's involvement with reproductive medicine,* Ohio State University Press, 2000.
- Andrea Tone, *Devices and desires: A history of contraceptives in America*, Hill and Wang, 2001.

Week 12
Selling Genes: the Business of Biotechnology and the Human Genome Project

Lecture: Dec 19 (Carsten Timmermann)

In this final lecture of the course we will turn to a set of issues that has generated much public debate in recent years: the potential applications of molecular biology and biotechnology. We will discuss the origins of both the technology and the concerns that dominate the debate.

Coursework due

There is no seminar this week.

Please hand in two copies of your essay (and project) after the lecture or post them in the CHSTM essay box outside the departmental office, room 3.45.

Background Reading

- Kaja Finkler, *Experiencing the New Genetics: Family and kinship on the medical frontier*, Philadelphia: University of Pennsylvania Press, 2000.
- Jose Van Dijck, *Jmagenation: Popular Images of Genetics,* Macmillan Press, 1998.
- Theresa Marteau and Martin Richards, eds, *The Troubled Helix: Social and Psychological Implications of the New Human Genetics*, Cambridge: Cambridge University Press, 1996.
- Ruth Hubbard and Eiijah Wald, *Exploding the Gene Myth: How Genetic Information is Produced and Manipulated by Scientists, Physicians, Lawyers, Insurance Companies, Educators, and Law Enforcers*, Boston: Beacon Press, 1997.
- Daniel Kevles and Leroy Hood, eds, *The Code of Codes: Scientific and Social Issues in the Human Genome Project*, Cambridge, MA: Harvard University Press, 1992.
- Weir, Lawrence and Fales, eds, *Genes and Human Self-Knowledge. historical and philosophical reflections on modern genetics*, University of Iowa Press, 1994.
- Ruth Chadwick, ed., *Ethics, Reproduction and Genetic Control*, 2nd edition, London: Routledge, 1992.
- D.C. Grossman and H. Valtin, eds, *Great Issues for Medicine in the 21st Century: Ethical and Social Issues Arising out of Advances in the Biomedical Science*s = *Annals of the New York Academy of Sciences*, 882, 1999.
- Andrew Kimbrell, *The Human Body Shop: the engineering and marketing of life*, 2nd edition, Washington D.C.: Regnery, 1997.

Centre for History of Science, Technology and Medicine
University of Manchester

ESSAY GUIDELINES FOR UNDERGRADUATES

1. Presentation

Type your essay, double-spaced, on one side of the paper only.

Number the pages and leave margins - left, right, top and bottom - of one inch for marker's comments.

Course outlines will specify the word-length. Hand in **two** copies of your essay, either directly to your lecturers or at a place designated by them.

Essays which ignore these guidelines will lose marks.

2. Planning the essay

Check the course outline to find out how much reading is expected for an essay. (You will be expected to go well beyond required lecture and seminar readings.)

Prepare an outline of your argument. The outline should list in abbreviated form (e.g. on one side of A4), the points you wish to make, and the kind of evidence which you will cite. Once this outline is coherent, then draft the essay from it.

3. Writing the essay

The first paragraph should introduce the overall aims of the essay, and the last paragraph should briefly summarise your conclusions.

In order to help the reader, your paragraph structure should mirror the structure of your argument. Avoid a succession of very short paragraphs (one or two sentences) or long ones (more than one page).

Although your essay may refer briefly to required readings or lectures, your argument will need to go well beyond these sources. Simply re-iterating points already made therein will be heavily penalised.

4. Citing sources

If you use an author's argument or evidence, you must cite the author and title of the work you have used. You may cite these sources at the bottom of the page (footnotes), at the end of the essay (endnotes) or in the text in brackets (….). Since the full reference will be in your bibliography (see below), you need only use an abbreviated form of reference, e.g. 'Latour, *Science in Action*, p. 123'.

Do not bother to quote an author directly unless his/her particular phrasing is important for your argument.

If you do take text directly from a work, however, you must signal that fact; failure to do so constititutes **plagiarism** (see para 6 below). Quotes of 3 lines or less should be enclosed with inverted commas; longer quotes should be indented as a bloc. In addition you must cite the author's name, title and the page where the quote appeared.

Attach a bibliography at the end of your essay. Include only those sources you have used, following this model:

- **For books:**
  Bruno Latour, *Science in Action: how to follow scientists and engineers through society*, Cambridge, Mass.: Harvard University Press, 1987.

- **For journal articles**
  Steven Shapin, "Discipline and Bounding: the history and sociology of science as seen through the externalism-internalism debate," *History of Science*, 30, 1992, 333-369.

- **For book chapters**
  Londa Schiebinger, "Why Mammals are Called Mammals: gender politics in eighteenth century natural history," in: Evelyn Fox Keller and Helen E. Longino, editors, *Feminism and Science*, Oxford: Oxford University Press, 1996, 137-153.

- **For websites**
  Victorian Women Writers Project, edited by Perry Willet. Accessed 23rd April 2003. <http://www.indiana.edu/~letrs/vwwp/>

Use your sources critically. Simply reproducing what an author says does not impress markers. Noticing where an author's argument is weak does.

5. Marks

Once the essay has been marked, you may collect it from the lecturer responsible or the appropriate tray in the CHSTM Office. The mark given at this stage is provisional only; it does not become final until approved at the examiners' meeting in June.

Marks are awarded according to the following criteria:

- **Coverage of the relevant literature:** have you drawn upon a reasonable number of sources from the reading list?

- **Understanding** (of lectures, required readings, and readings used in your essay).

- **Structure of the argument:** have you set out your argument or analysis in a clear way and supported it with relevant evidence?

- **Critical capacity:** have you noticed the weaknesses in some authors' work? Have you reflected upon the weak points in your own argument?

- **Quality of prose:** have you used complete sentences properly punctuated? Is your meaning clear?
- **Organisation of the material:** does the sequence in which you present material make sense? Have you started a new paragraph each time you make a new point? Have you included an introduction and a concluding paragraph?

- **Format:** have you followed the essay guidelines?

6. PLAGIARISM:

Plagiarism is a serious offence. The penalties for it range from being required to resubmit the piece of work in question (with a maximum possible mark of 40%) for minor instances to expulsion from the University in serious ones. It is **your responsibility** to familiarise yourself with the meaning of 'plagiarism' as well as the University's policy on plagiarism before you prepare and submit any coursework. A plea to the effect that 'I didn't realise what plagiarism was' will not be accepted. The information you need can be accessed via the Student Intranet (via the University's home page). Bear in mind that plagiarism also includes 'recycling' parts of **your own** work which have been submitted for assessment at this University or elsewhere. When you hand in your essay, please make sure that you attach the 'Plagiarism Declaration' included with this course handbook.

Plagiarism Declaration

To be handed in with all assessed essays and projects

1. Coursework, dissertations and essays submitted for assessment must be the student's own work, unless in the case of group projects a joint effort is expected and is indicated as such.
2. Unacknowledged direct copying from the work of another person, or the close paraphrasing of somebody else's work, is called plagiarism and is a serious offence, equated with cheating in examinations. This applies to copying **from other students' work, your own previous work, and from published sources** such as books, reports or journal articles. Plagiarised material may originate from any source. **It is as serious to use material from the World Wide Web or from a computer based encyclopaedia or literature archive as it is to use material from a printed source if it is not properly acknowledged**.
3. Use of quotations or data from the work of others is entirely acceptable, and is often very valuable, **provided that the source of the quotation or data is given in a footnote**. Failure to provide a source or put quotation marks around material that is taken from elsewhere gives the appearance that the comments are one's own. When quoting word-for-word from the work of another person quotation marks or indenting (setting the quotation in from the margin for longer quotations) must be used and the source of the quoted material must be acknowledged.
4. Paraphrasing, when the original statement is still identifiable and has no acknowledgement, is plagiarism. Taking a piece of text, from whatever source, and substituting words or phrases with other words or phrases is plagiarism. Any paraphrase of another person's work must have an acknowledgement to the source. It is not acceptable to put together unacknowledged passages from the same or from different sources linking these together with a few words or sentences of your own and changing a few words from the original text: this is regarded as over-dependence on other sources, which is a form of plagiarism.
5. Direct quotations or paraphrasing from an earlier piece of the student's own work, if unattributed, suggests that the work is original, when in fact it is not. The direct copying of one's own writings qualifies as plagiarism if the fact that the work has been or is to be presented elsewhere is not acknowledged.
6. Plagiarism is a serious offence and will always result in imposition of a penalty, ranging from a minimum of a zero mark for the work (with or without allowing resubmission) to disciplinary measures such as suspension or expulsion.

Assessed coursework for (course unit name) _____

Course code: _____

I certify that this assessed coursework includes no plagiarism as defined in the above university statements, which I have read and understood.

Signed _____ Date _____

NAME (IN CAPITALS) _____